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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,011	07/23/2001	Mark Leslie Smythe	065064/0135	9310

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EXAMINER

CLOW, LORI A

ART UNIT PAPER NUMBER

1631

DATE MAILED: 03/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/830,011

Applicant(s)

SMYTHE ET AL.

Examiner

Lori A. Clow, Ph.D.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 27,28,31-38 and 40-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27,28 and 32 is/are rejected.
- 7) ☒ Claim(s) 31-38 and 40-44 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 26 February 2004 has been entered.

Claims 1, 3, 4, 16-17, 39, 27, 28, 31-38, and 40-44 are pending. Claims 2, 5-15, 18-26, and 29-30 have been cancelled. Applicant is reminded to cancel claims to non-elected inventions (i.e. claims 1, 3, 4, 16-17, and 39). It is also pointed out that the status of claim 39 is incorrect in the amendment filed 26 February 2004. Claim 39 should be listed as withdrawn.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 27 and 28 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 27 and 28 are directed to a computer program. Computer programs claimed as per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines

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structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. MPEP 2106.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 31 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 31, steps (i) and (ii) recite "each side chain is simplified as a C $\alpha$ -C $\beta$  vector". It is unclear what is meant by simplified. Does Applicant intend that the side chain is "represented" by a C $\alpha$ -C $\beta$  vector?

Claim 31, steps (ii) and (iii) recite "creating a query corresponding to a description of a location and orientation in 3D space of respective side chains of two or more amino acid residues". It is unclear what is meant by "respective side chains". Of what are the side chains respective? Does Applicant intend that these are representative side chains?

Claim 31, step (vi) recites at lines 3-5 "thereby create an engineered framework protein the particular property, characteristic, or function". It appears that a word is missing from this step. Perhaps applicant intends this to read "thereby create an engineered framework protein **having** the particular property, characteristic, or function". Appropriate correction is required.

The amendments to claim 32 have rendered the claim nonsensical and it is unclear exactly what limitation(s) Applicant intends from said claim language. Correction is requested.

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Claim 44, step (a) requires filtering said hits. However, it is unclear what criteria is used to perform such a filtering step. Clarification is requested.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 27 and 28 remain rejected under 35 U.S.C. 102(b) as being anticipated by Lauri et al. (Journal of Computer Aided Molecular Design, Vol. 8 (1994) pages 51-66).

Lauri et al. disclose the computer program, CAVEAT, which was devised to facilitate structure-based design of enzyme inhibitors and related biologically active molecules. **The program may be used for any such project attempting to identify proteins that are similar to query proteins.** The CAVEAT search engine is designed to retrieve information from a database of 3D structure molecules with specific bonds that **match a vector relationship specified in the query.** The geometrical attributes of the bonds, rather than their chemical or electronic character, are the primary issue. The representation of the specific bonds in the database structures as vectors, and the pre-organization of a database around pre-computed pairs of such vectors (vector pairs) are the key features of the CAVEAT search process ( see again page 53, 1<sup>st</sup> and 2<sup>nd</sup> paragraph). Furthermore, the choice of vector pairs may comprise a variety of sources, such as a database comprising vector pairs of substituents of cyclic or polycyclic molecules (page 54, 2<sup>nd</sup> paragraph). Claims 29 and 30, while incorporating the names

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VECTRIX and POSTVEC, are not different from the program CAVEAT and are also rejected.

The programs, regardless of the name, are the same.

Applicant had previously argued that the search in Lauri is done by breaking down the query into a list of binned and indexed vector pairs, while the present invention is directed to comparison of unbinned distances between vectors. Applicant has amended the claims to include language that state "wherein a hit is defined according to a minimum number of  $C\alpha$ - $C\beta$  vector matches that are determined by a comparison of distances between the distance matrix representation of said query and the distance matrix representation of each said entry". There is still nothing in claim 27 that requires comparisons of unbinned distances and the claims still read on the prior art of Lauri et al. as stated above. The bins in Lauri et al. are vector pair representation of distances and the claim is not distinguished over the disclosure of Lauri et al.

### ***Conclusion***

Claims 27 and 28 are rejected under 35 USC 102(b).

Claims 31-44 are rejected under 35 USC 112.

No claims are allowed.

### ***Inquiries***

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and

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1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The CM1 Fax Center number is either (703) 308-4242, or (703) 308-4028.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lori A. Clow, Ph.D., whose telephone number is (571) 272-0715. The examiner can normally be reached on Monday-Friday from 10 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Woodward, Ph.D., can be reached on (571) 272-0722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Legal Instrument Examiner, Tina Plunkett, whose telephone number is (703) 305-3524, or to the Technical Center receptionist whose telephone number is (571) 272-0549.

MARJORIE MORAN  
PATENT EXAMINER

*Marjorie A. Moran*  
*3/19/04*

March 17, 2004

Lori A. Clow, Ph.D.

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*Lori A. Clow*